## No model adjustment

### OKSIR REGION A

| YEAR | MAE |
| --- | --- |
| 1995 | 0.18205 |
| 1996 | 0.29896 |
| 1997 | 0.26851 |
| 1998 | 0.17935 |
| 1999 | 0.1912 |
| 2000 | 0.28711 |
| 2001 | 0.18513 |
| 2002 | 0.24834 |
| 2004 | 0.27025 |
| 2005 | 0.37282 |
| 2006 | 0.30965 |
| 2007 | 0.31377 |
| 2008 | 0.24951 |
| 2009 | 0.30049 |
| 2010 | 0.23643 |
| 2011 | 0.28231 |
| 2012 | 0.41193 |
| 2013 | 0.39556 |
| 2014 | 0.26788 |
| 2015 | 0.22649 |

### 4-YEAR FIELDS

| FIELD/YEAR | MAE |
| --- | --- |
| AllrCoug/2018 | 0.03178 |
| AllrCoug/2019\* | 0.07996 |
| AllrCoug/2020\* | 0.12171 |
| AllrCoug/2021\* | 0.13811 |
| CRO/2018 | 0.13898 |
| CRO/2019 | 0.07124 |
| CRO/2020 | 0.07136 |
| CRO/2021 | 0.13316 |
| Hansen/2018 | 0.25208 |
| Hansen/2019 | 0.16067 |
| Hansen/2020 | 0.26235 |
| Hansen/2021\* | 0.13085 |
| HoskGibOth/2018 | 0.23086 |
| HoskGibOth/2019 | 0.18107 |
| HoskGibOth/2020\* | 0.10095 |
| HoskGibOth/2021\* | 0.14254 |
| Royal/2018 | 0.23314 |
| Royal/2019 | 0.196 |
| Royal/2020 | 0.21704 |
| Royal/2021 | 0.27499 |
| ValKoe/2018 | 0.20814 |
| ValKoe/2019 | 0.07896 |
| ValKoe/2020\* | 0.18485 |
| ValKoe/2021\* | 0.08083 |
| fiveEa/2018 | 0.23336 |
| fiveEa/2019 | 0.19881 |
| fiveEa/2020 | 0.16147 |
| fiveEa/2021 | 0.15646 |

* lower than 2.5 cumulative captures per trap

## JW Location Parameter (=69)

### OKSIR REGION A

| YEAR | MAE | TEST EFFICACY | BEST EFFICACY |
| --- | --- | --- | --- |
| 1995 | 0.04501 | 0.01193 | 0.01193 |
| 1996 | 0.0892 | 0.00576 | 0.00576 |
| 1997 | 0.05808 | 0.00588 | 0.00588 |
| 1998 | 0.05244 | 0.00689 | 0.00689 |
| 1999 | 0.06261 | 0.0149 | 0.0149 |
| 2000 | 0.0245 | 0.00583 | 0.00583 |
| 2001 | 0.03199 | 0.00671 | 0.00671 |
| 2002 | 0.09643 | 0.00689 | 0.00689 |
| 2004 | 0.12652 | 0.00613 | 0.00613 |
| 2005 | 0.21092 | 0.00474 | 0.00474 |
| 2006 | 0.0235 | 0.00528 | 0.00528 |
| 2007 | 0.06404 | 0.00552 | 0.00552 |
| 2008 | 0.03506 | 0.00586 | 0.00586 |
| 2009 | 0.0374 | 0.00426 | 0.00426 |
| 2010 | 0.05017 | 0.00685 | 0.00685 |
| 2011 | 0.04265 | 0.00592 | 0.00592 |
| 2012 | 0.08587 | 0.00441 | 0.00441 |
| 2013 | 0.06221 | 0.00422 | 0.00422 |
| 2014 | 0.04025 | 0.00606 | 0.00606 |
| 2015 | 0.0982 | 0.00707 | 0.00707 |

### 4-YEAR FIELDS

| FIELD/YEAR | MAE | TEST EFFICACY | BEST EFFICACY |
| --- | --- | --- | --- |
| AllrCoug/2018 | 0.0333 | 0.09988 | 0.09988 |
| AllrCoug/2019\* | 0.16718 | 0.00573 | 37638.3 |
| AllrCoug/2020\* | 0.01802 | 0.01577 | 0.01761 |
| AllrCoug/2021\* | 0.07898 | 0.00654 | 0.00919 |
| CRO/2018 | 0.12801 | 0.09988 | 0.00791 |
| CRO/2019 | 0.06516 | 0.06382 | 0.06382 |
| CRO/2020 | 0.11939 | 0.01638 | 501851 |
| CRO/2021 | 0.04223 | 0.00786 | 0.0094 |
| Hansen/2018 | 0.20841 | 0.03782 | 0.00539 |
| Hansen/2019 | 0.12338 | 0.03502 | 0.00601 |
| Hansen/2020 | 0.09285 | 0.00691 | 0.00508 |
| Hansen/2021\* | 0.0719 | 0.00969 | 0.00969 |
| HoskGibOth/2018 | 0.03213 | 0.00551 | 0.00551 |
| HoskGibOth/2019 | 0.12494 | 0.02535 | 0.00563 |
| HoskGibOth/2020\* | 0.11632 | 0.006 | 0.02323 |
| HoskGibOth/2021\* | 0.13617 | 0.00969 | 0.00856 |
| Royal/2018 | 0.05353 | 0.00551 | 0.00568 |
| Royal/2019 | 0.02201 | 0.00585 | 0.00585 |
| Royal/2020 | 0.0736 | 0.01174 | 0.00651 |
| Royal/2021 | 0.10813 | 0.00913 | 0.0058 |
| ValKoe/2018 | 0.05057 | 0.0056 | 0.006 |
| ValKoe/2019 | 0.11761 | 0.00585 | 0.02568 |
| ValKoe/2020\* | 0.0236 | 0.00654 | 0.00654 |
| ValKoe/2021\* | 0.09786 | 0.00802 | 0.0395 |
| fiveEa/2018 | 0.2063 | 0.0539 | 0.00566 |
| fiveEa/2019 | 0.17433 | 0.06382 | 0.00622 |
| fiveEa/2020 | 0.07971 | 0.00691 | 0.00691 |
| fiveEa/2021 | 0.05132 | 0.00838 | 0.00749 |

* lower than 2.5 cumulative captures per trap

## Location Parameter Optimization

| FIELD | MAE |  |
| --- | --- | --- |
| OKSIR | 0.03871 | 139 |
| AllrCoug | 0.03058 | 54 |
| CRO | 0.02944 | 49 |
| Hansen | 0.02698 | 149 |
| HoskGibOth | 0.03487 | 110 |
| Royal | 0.02881 | 138 |
| ValKoe | 0.03665 | 82 |
| fiveEa | 0.02182 | 57 |

AllrCoug2019, Hansen2021, Hosk2021, fiveEa2021 excluded for poor data quality (low sample size or late sampling) and/or extremely non-JSB distributed data for the purposes of correct biofix optimization.

* lower than 2.5 cumulative captures per trap

### OKSIR REGION A

| YEAR | MAE | TEST EFFICACY | BEST EFFICACY |
| --- | --- | --- | --- |
| 1995 | 0.02503 | 0.08291 | 0.08291 |
| 1996 | 0.01784 | 0.01528 | 0.01528 |
| 1997 | 0.01776 | 0.0133 | 0.0133 |
| 1998 | 0.00436 | 0.02542 | 0.02542 |
| 1999 | 0.02514 | 150712 | 150712 |
| 2000 | 0.06187 | 0.00906 | 0.00906 |
| 2001 | 0.01587 | 0.02772 | 0.02772 |
| 2002 | 0.02662 | 0.03211 | 0.03211 |
| 2004 | 0.03609 | 0.01615 | 0.01615 |
| 2005 | 0.12058 | 0.00629 | 0.00629 |
| 2006 | 0.05132 | 0.00692 | 0.00692 |
| 2007 | 0.01544 | 0.00796 | 0.00796 |
| 2008 | 0.01379 | 0.01342 | 0.01342 |
| 2009 | 0.00968 | 0.00589 | 0.00589 |
| 2010 | 0.04434 | 0.029 | 0.029 |
| 2011 | 0.04168 | 0.00908 | 0.00908 |
| 2012 | 0.02159 | 0.00601 | 0.00601 |
| 2013 | 0.0215 | 0.00583 | 0.00583 |
| 2014 | 0.05133 | 0.00954 | 0.00954 |
| 2015 | 0.04865 | 0.03399 | 0.03399 |

### 4-YEAR FIELDS

| FIELD/YEAR | MAE | TEST EFFICACY | BEST EFFICACY |
| --- | --- | --- | --- |
| AllrCoug/2018 | 0.03829 | 0.04794 | 0.04794 |
| AllrCoug/2019\* | 0.07893 | 0.04794 | 0.09057 |
| AllrCoug/2020\* | 0.1272 | 0.06926 | 0.01157 |
| AllrCoug/2021\* | 0.1287 | 0.05003 | 0.00841 |
| CRO/2018 | 0.02329 | 0.00661 | 0.00661 |
| CRO/2019 | 0.09271 | 0.00661 | 0.02509 |
| CRO/2020 | 0.08461 | 0.01585 | 0.06542 |
| CRO/2021 | 0.12525 | 0.03237 | 0.00722 |
| Hansen/2018 | 0.01438 | 0.01297 | 0.01297 |
| Hansen/2019 | 0.03987 | 0.01297 | 0.01469 |
| Hansen/2020 | 0.04088 | 0.01383 | 0.00722 |
| Hansen/2021\* | 0.18437 | 0.01163 | 0.01008 |
| HoskGibOth/2018 | 0.05115 | 0.00642 | 0.00642 |
| HoskGibOth/2019 | 0.04197 | 0.00642 | 0.00649 |
| HoskGibOth/2020\* | 0.14749 | 0.00646 | 0.06981 |
| HoskGibOth/2021\* | 0.16256 | 0.02757 | 0.00914 |
| Royal/2018 | 0.0289 | 0.0127 | 0.0127 |
| Royal/2019 | 0.05526 | 0.0127 | 0.0123 |
| Royal/2020 | 0.06694 | 0.0125 | 0.02344 |
| Royal/2021 | 0.03171 | 0.01615 | 0.01486 |
| ValKoe/2018 | 0.02178 | 0.0063 | 0.0063 |
| ValKoe/2019 | 0.11134 | 0.0063 | 0.03432 |
| ValKoe/2020\* | 0.06491 | 0.02031 | 0.00698 |
| ValKoe/2021\* | 0.09313 | 0.01587 | 0.06401 |
| fiveEa/2018 | 0.0157 | 0.00541 | 0.00541 |
| fiveEa/2019 | 0.03851 | 0.00541 | 0.00592 |
| fiveEa/2020 | 0.0933 | 0.00566 | 0.00654 |
| fiveEa/2021 | 0.07156 | 0.00596 | 0.00699 |

* lower than 2.5 cumulative captures per trap

## Summaries

|  | UNADJUSTED | ADJUSTED | LOCATION OPTIMIZED |
| --- | --- | --- | --- |
| MAE | 0.2073 | 0.0797 | 0.0508 |

## Parameter tables

### -efficacy function

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2.02079e+08 (1.68179e+06) | 7.73644e+06 (1.77182e+05) | -3.45074e+04 (1.30100e+03) | 4.37642e+02 (4.69461e+00) | 7.13054e-01 (1.19701e-03) |

|  |  |  |  |
| --- | --- | --- | --- |
| 1.68915e+08 (1.34721e+06) | 4.31763e+06 (1.26037e+05) | -1.40268e+03 (9.49444e+02) | 6.44335e+01 (3.09119e+00) |

### -efficacy function

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1.26265e+08 (3.43752e+06) | 7.36231e+05 (1.30763e+05) | 1.33322e+04 (1.08820e+03) | 3.34660e+02 (8.11936e+00) | 1.69844e+00 (3.21488e-03) |

|  |  |  |  |
| --- | --- | --- | --- |
| 1.20413e+08 (2.96211e+06) | -9.23996e+05 (1.08729e+05) | 6.59196e+04 (6.66640e+02) | -3.17110e+02 (2.16245e+00) |

### -efficacy function

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2.26656e+00 (4.06859e-02) | 1.14938e+00 (2.34613e-03) | 3.51103e+01 (1.42409e-01) | 2.28095e-03 (5.00408e-06) | 1.10451e-03 (3.40695e-06) |

### Density-efficacy function

|  |  |
| --- | --- |
| 4.10e-01 (1.97e-01) | -1.74e-02 (2.42e-02) |

|  |  |
| --- | --- |
| 7.52e+01 (8.01e+00) | -1.67e+0 (9.88e-01) |

## Density analysis

| FIELD/YEAR | COUNT | AREA (HA) | DENSITY |
| --- | --- | --- | --- |
| AllrCoug/2018 | 64 | 225.56 | 0.283 |
| AllrCoug/2019 | 67 | 226.20 | 0.296 |
| AllrCoug/2020 | 102 | 219.51 | 0.464 |
| AllrCoug/2021 | 58 | 221.96 | 0.261 |
| CRO/2018 | 265 | 772.40 | 0.343 |
| CRO/2019 | 270 | 772.42 | 0.349 |
| CRO/2020 | 212 | 703.12 | 0.301 |
| CRO/2021 | 185 | 657.85 | 0.281 |
| Hansen/2018 | 95 | 163.49 | 0.581 |
| Hansen/2019 | 80 | 163.18 | 0.490 |
| Hansen/2020 | 75 | 160.12 | 0.468 |
| Hansen/2021 | 76 | 162.11 | 0.468 |
| HoskGibOth/2018 | 118 | 303.86 | 0.388 |
| HoskGibOth/2019 | 138 | 305.73 | 0.451 |
| HoskGibOth/2020 | 72 | 288.73 | 0.249 |
| HoskGibOth/2021 | 73 | 285.52 | 0.255 |
| Royal/2018 | 204 | 611.93 | 0.333 |
| Royal/2019 | 150 | 611.44 | 0.245 |
| Royal/2020 | 149 | 602.49 | 0.247 |
| Royal/2021 | 145 | 578.74 | 0.250 |
| ValKoe/2018 | 86 | 229.14 | 0.375 |
| ValKoe/2019 | 47 | 229.04 | 0.205 |
| ValKoe/2020 | 55 | 279.43 | 0.196 |
| ValKoe/2021 | 57 | 278.96 | 0.204 |
| fiveEa/2018 | 48 | 90.89 | 0.528 |
| fiveEa/2019 | 30 | 89.33 | 0.335 |
| fiveEa/2020 | 30 | 88.75 | 0.338 |
| fiveEa/2021 | 17 | 67.856 | 0.250 |